

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A focus searching method in which a laser beam is irradiated on an optical disc from a beam incident surface side thereof through an objective lens, and a return light from a signal surface of the optical disc is received by a photodetector in the middle of raising or lowering the objective lens placed on standby at a lens midpoint between a lower lens bottom point and an upper lens top point based on a focus search driving signal during focus searching, and whether the objective lens is focused on the signal surface of the optical disc while keeping a predetermined working distance to the beam incident surface of the optical disc is determined on the basis of the detection information from the photodetector, the method comprising the steps of:

storing in advance a temporarily set lens bottom point voltage corresponding to a temporarily set lens bottom point temporarily set at a lower position that has more sufficient room ~~that~~ than a predetermined working distance of the objective lens, and a temporarily set lens top point voltage corresponding to a temporarily set lens top point temporarily set at a position slightly before the objective lens abuts on the beam incident surface of the optical disc;

obtaining a focus search driving voltage corresponding to the signal surface of the optical disc based on the detection information from the photodetector when the objective lens is focused on the signal surface of the optical disc in the middle of raising or lowering the objective lens placed on standby at the lens midpoint between the temporarily set lens bottom point and the temporarily set lens top point based on the temporarily set lens bottom point voltage and a temporarily set lens top point voltage;

and obtaining a lens bottom point voltage and a lens top point voltage at the time of device starting by an arithmetic operation program based on the focus search driving voltage and a predetermined factor, and setting the lens bottom point corresponding to the lens bottom point voltage to be nearer to the lens midpoint side than the temporarily set lens bottom point while setting the lens top point corresponding to the lens top point voltage to be nearer to the lens midpoint side than the temporarily set lens top point.

2. (currently amended) An optical disc device in which a laser beam is irradiated on an optical disc from a beam incident surface side thereof through an objective lens, and a return light from a signal surface of the optical disc is received by a photodetector in the middle of raising or lowering the objective lens placed on standby at a lens midpoint between a lower lens bottom point and an upper lens top point based on a focus search driving signal during focus searching, and whether the objective lens is focused on the signal surface of the optical disc while keeping a predetermined working distance to the beam incident surface of the optical disc is determined on the basis of the detection information from the photodetector, the device comprising:

storing means for storing in advance a temporarily set lens bottom point voltage corresponding to a temporarily set lens bottom point temporarily set at a lower position that has more ~~sufficient~~ room ~~that~~ than a predetermined working distance of the objective lens, and a temporarily set lens top point voltage corresponding to a temporarily set lens top point temporarily set at a position slightly before the objective lens abuts on the beam incident surface of the optical disc;

focus search driving signal generating means for obtaining a focus search driving voltage corresponding to the signal surface of the optical disc based on the detection information from the photodetector when the objective lens is focused on the signal surface of the optical disc in the middle of raising or lowering the objective lens placed on standby at the lens midpoint between the temporarily set lens bottom point and the temporarily set lens top point based on the temporarily set lens bottom point voltage and a temporarily set lens top point voltage; and

arithmetic operating means for obtaining a lens bottom point voltage and a lens top point voltage at the time of device starting by an arithmetic operation program based on the focus search driving voltage and a predetermined factor, and setting the lens bottom point corresponding to the lens bottom point voltage to be nearer to the lens midpoint side than the temporarily set lens bottom point while setting the lens top point corresponding to the lens top point voltage to be nearer to the lens midpoint side than the temporarily set lens top point.